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Making space for fat bodies?: A critical account of 'the obesogenic environment'

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Abstract

A key focus for geographical and policy work on obesity has involved interrogating the concept of an ‘obesogenic environment’ – an environment with particular physical, social and economic characteristics considered to contribute towards the propensity of bodies to be or to become obese/fat. Alongside this, Critical Geographies of Obesity/Fatness challenge the classification of fat bodies as diseased and in need of intervention by drawing attention to the politics surrounding the governance of fatness and the multiple experiences of body size. In this article, we place these strands of geographical work alongside each other in order to develop Critical Geographies of Obesogenic Environments. In so doing, we not only set out the main tenets of work in geography on obesity/fatness but also raise specific questions about the ways in which bodies, environments and body-environment interactions have been conceptualised and researched. We do so in order to develop and present three research trajectories for Critical Geographies of Obesogenic Environments which will allow geographical research to more carefully, reflexively and critically engage within obesity/fatness. Specifically, this involves redefining obesogenic environments not as environments that make bodies fat, but as environments that make fat bodies problematic; engaging sensitively with the multiplicities of fat embodied experience; and considering alternative theoretical frameworks in order to avoid the pitfalls of environmental determinism.

Keywords: obesogenic environment, body, Fat Studies, obesity, fat, health

I. Introduction

To understand the worldwide rise in obesity prevalence it is necessary to consider a whole host of environmental factors (Pearce and Witten, 2010a:4).

Over the past ten years, obesity/fatnessⁱ and weight related health, have become major concerns for public health policy on a national and global level. These concerns are based upon claims that incidences of overweight and obesity are increasing across adult and child populations in a number of developed and developing countries (see Lobstein and Jackson-Leach 2007; World Health Organisation 2006) and that overweight and obesity are risk factors for a range of illnesses (Kopelman 2007). As such, policy makers and academics, including geographers (see Pearce and Witten 2010b) have become interested in accounting for and understanding the prevalence and causes of obesity as well as developing 'solutions' to 'the obesity problem'.

Of particular significance for geographical research, is a recent shift in obesity policy away from an individualistic model of obesity – that attributes responsibility for obesity to individuals – to an 'ecological model' through which population levels of obesity are understood to be a result of 'obesogenic environments' (Smith and Cummins, 2008). Such environments, defined in policy terms as 'the whole range of social, cultural and infrastructural conditions that influence an individual's ability to adopt a healthy lifestyle' (Foresight 2007:52), draw attention to particular relationships between obese or potentiallyⁱⁱ obese bodies and particular qualities of, and activities that occur in, (predominantly urban) environments. These environmental qualities and activities include, for example, aesthetics, cleanliness, crime and safety, the physical layout and land use in an area (e.g. incidence of pavements/sidewalks, provision of green spaces, density of housing, car use), and the location and incidence of particular food outlets and leisure facilities (e.g. supermarkets, local stores,

leisure centres). Such explanations of obesity have proven compelling for geographers and policy makers alike, having strong resonance with core areas of inquiry in medical geography and epidemiology concerning 'the relative importance of context and composition in explaining health inequalities' (Smyth, 2008:119). Geographers' engagements with these theories has led to the development of a subdisciplinary field referred to here as Geographies of Obesity (Pearce and Witten, 2010b). Such accounts have been positioned as providing a more 'ethical' approach to obesity which shifts the 'focus from the putative moral failings of fat people to the structural or environmental causes of obesity' (Guthman, 2012:2) and is driven by an imperative to reveal and challenge inequalities in health.

Alongside these developments, there has also been a growth in critical academic, clinical and activist work, referred to as 'Fat Studies', 'Critical obesity/weight studies' and/or 'Health at Every Size' (HAES)ⁱⁱⁱ research. Such research seeks to expose the simplistic assumptions which underpin claims that fatness is inherently problematic, question the validity of claims that overweight and obesity are increasing at such alarming rates (Campos, 2004; Gard and Wright, 2005), draw attention to the ethical implications of promoting weight loss as a health intervention (Aphramor, 2010), and challenge the stigma associated with body size (Rothblum and Solovay, 2009). Geographers are already playing a key role in the development of this critical literature (see for example, Andrews et al., 2012; Colls and Evans 2009; Evans et al., 2012; Guthman, 2011; Hopkins, 2008; 2012; Longhurst, 2005; 2012) which has culminated in a growing subdisciplinary field referred to here as 'Critical Geographies of Obesity/Fatness'.

To summarise, both within and beyond the discipline there are two bodies of knowledge concerned with obesity/fatness: research that accepts the core tenets of a medically derived account of fat bodies as pathological (Geographies of Obesity) and research which offers alternative accounts of fatness which do not consider a fat body to be inherently diseased (Critical^{iv} Geographies

of Obesity/Fatness). It must be stated that these subdisciplinary areas are not wholly oppositional and do share a similar commitment to reveal the ways in which spatial variations in social, cultural, political and economic factors affect different bodies' capacities to be well. Indeed, their common concern with health inequalities can be seen in the focus on 'the environment' in Geographies of Obesity research, which is driven by an ethical imperative to make evident the relationship between social disadvantage and health (see Pearce and Witten, 2010b), and the interest within Critical Geographies of Obesity/Fatness in how the reproduction of particular ideologies of class, ethnicity, and gender are integral to the stigmatisation of fat bodies and the inequalities they experience (see Colls and Evans, 2009). Moreover, there has already been some interaction between these two bodies of work in Geography, including critiques of the concept of 'obesogenic environments' within work in Critical Geographies of Obesity/Fatness (see for example Evans, 2010; Evans and Colls, 2009; Evans et al., 2012; Guthman 2011; 2012), and recognition of the importance of 'moral' environments within Geographies of Obesity (see Smith and Cummins, 2008).

However, despite these connections, we argue in this paper that there *are* fundamental and significant differences between these bodies of work which cannot be ignored. For example there is a clear ontological difference between an approach which considers a fat body to be inherently diseased (Geographies of Obesity), and research which challenges any direct association between body size and health (Critical Geographies of Obesity/Fatness) (see Jayne et al., 2008 who identify a similar divide in alcohol research). The intention of this article, therefore, is to place the main tenets of these different, but related, bodies of geographical research on obesity and fatness alongside each other in order to present a critical account of 'the obesogenic environment'. In short, we aim to shift the emphasis away from identifying (environmental) factors which make a body fat (and therefore problematic) in order to highlight instead the ways in which particular social, cultural, political and economic environments can make *living as* a fat body problematic.

Specifically, we turn the critical lens offered by Critical Geographies of Obesity/Fatness to the content of 'ecological' or 'environmental' models of 'obesity', in order to question the ways in which the body, the environment and body-environment relations are conceptualised and researched in such work. It is important, therefore, to state that the critical approach we adopt here does not mean stating that a body of work is 'wrong'. Instead it involves engaging directly with Geographies of Obesity research, identifying its main tenets and concerns, and thus acknowledging possible connections as well as noticeable divergences. Indeed, as we have stated elsewhere:

We do not intend to be overly critical of, or question the personal ethics of, those geographers who work (uncritically) with dominant conceptualisations of fatness as inherently problematic (through, for example, the use of BMI^v data), but aim to highlight the importance of reflexivity in researching obesity (Colls and Evans 2009: 1015-6).

In this paper, we firstly provide a brief overview of the main conceptual and methodological tenets of research in geography on 'obesogenic environments', including the ways that bodies, environments, and body-environment relations are categorised and conceptualised through the use of specific bodily and environmental descriptors, and assumptions about how obesity is 'caused'. Secondly, we focus critical attention on three aspects of this work (measuring (obese) bodies, moralities, and embodied environments) in order to demonstrate what a critical approach to obesogenic environments can reveal, in ways which speak to current orthodoxy. This includes re-considering the variables used to describe and define both bodies and environments, their foundation in particular assumptions about what a body is, what it is capable of doing, and how it relates to and interacts with different environments, as well as the moral consequences of positioning particular (fat) bodies and environments as problematic and in need of intervention. In the final section, we propose three on-going and future research trajectories (conceptual, methodological and theoretical) through which we aim to develop 'Critical Geographies of

Obesogenic Environments'. This involves rethinking the very nature of what constitutes an obesogenic environment, developing new methodological approaches for geographical research on obesity/fatness and considering a wider range of theoretical work to interrogate body-environment relations, including that informed by urban political ecology and feminist theory.

II. Geographies of Obesity: Characterising Obesogenic Environments

The unique ability of geography and geographers allows a deeper understanding of the ecology of obesity through addressing multiple scales of causation across differing physical, social and cultural environments leading to a more nuanced approach (Smith and Cummins, 2008:530).

In this section, we will outline the main conceptual and methodological tenets of geographical research on obesogenic environments in order to present the context within which we situate our critical account. Our aim here is not to provide a comprehensive overview of this diverse and interdisciplinary field (for recent reviews see Townsend and Lake, 2009; Smith and Cummins, 2008). Indeed, it must be acknowledged that there is no single framework which is deployed in order to identify or define an obesogenic environment and there is significant debate within Geographies of Obesity about how best to conceptualise and research such environments.

1. Conceptual Tenets of Obesogenic Environment Research

Originally defined by Swinburn et al (1999: 564), as 'the sum of influences that the surroundings, opportunities or conditions of life have on promoting obesity in individuals and populations', conceptually, 'obesogenic environment' research aims to provide an 'ecological

perspective' (Smith and Cummins 2008) to understandings of obesity. This perspective situates the 'causes' of obesity in a body's relationships and interactions with particular (physical, social and cultural) 'environments'. As with other work in medical geography, research on obesogenic environments seeks to identify and interrogate the different qualities of 'health promoting' and 'health depleting' environments, in order to explain why 'some places have more obese people than others' (Procter et al., 2008:323).

There is debate within this work about the best way to conceptualise the 'environment' (see for example Harrington and Elliott, 2009 on the use of 'neighbourhood'). However, central to geographical research is a focus on the interaction between factors at multiple scales. As Smith and Cummins (2008:520) explain, much of this work uses "'multilevel" conceptual and analytical models to assess the independent relationships between people, places and obesity because they allow researchers to explore influences operating at varying geographical scales, such as the home, neighbourhood, city or country'. Exemplifying this, the most commonly used framework within research on obesogenic environments – ANGELO (Analysis Grid for Environments Linked to Obesity)^{vi} - divides environmental factors into two scales: micro (such as neighbourhood recreational facilities, 'healthy' food availability or school based policies on physical education), and macro (such as regional planning policies and the perception of obesity in national media). It then plots 'obesogenic factors' across these two scales and four 'environments' (physical, economic, sociocultural and political environments) (Harrington and Elliott, 2009). Within this model and related work, the 'environment' therefore exists as a range of measures or descriptors which indicate the uses, quality and physical form of spaces rather than a research site in and of itself. Bodies predominately exist as a range of measurements such as Body Mass Index (BMI) and Waist to Hip Ratio (WHR)^{vii} and demographic descriptors e.g. gender, age, ethnicity and income. Borrowing from medical models of the body, such work begins from the assumption that bodies of a particular size are inherently unhealthy and that there are 'known' relationships between different population groups, average body size and health (see for example, Moon et al 2007; Edwards et al., 2011).

The relationship between bodies and environments is conceptualised with reference to the simplistic 'energy balance model' which underpins many medical accounts of obesity. This model, as Pearce and Witten (2010a:4) explain, suggests that 'at a fundamental level, obesity arises from an imbalance between the quantity of energy consumed and the amount expended'. Obesogenic environments are therefore those which disrupt the body's 'natural' energy balance' (Foresight 2007: 6).^{viii} Indeed, work on obesogenic environments often focuses on either food environments (energy in) or physical activity environments (energy out) and/or classifies 'obesogenic factors' according to this model (see for example the thematic organisation of chapters in the edited collection by Pearce and Witten, 2010b). Within Geographies of Obesity, this relationship is further conceptualised with reference to deprivation amplification, whereby it is assumed that 'exposure to poor quality food environments amplifies individual risk factors for obesity such as low income, absence of transport, and poor cooking skills or knowledge' (Cummins and McIntyre, 2006:100).

It is also apparent within this work that what actually constitutes an 'obesogenic environment' is often relatively non-specific (Lake and Townsend 2006). For example, Pearce and Witten (2010a:5) refer to 'all factors that are external to the individual including the social, political, economic, built or biophysical spheres'. This multiplicity of factors has been identified as problematic since, as Kirk et al (2010:116) warn:

'not only is it [obesogenic environment] an elusive concept that is difficult to define and conceptualise, but attempting to consider every possible environmental contribution to energy balance can quickly become overwhelming'.

In addition, the environment exists as a spatial container, with a series of characteristics conceptualised as barriers and/or resources (or lack thereof), which facilitate or impede energy flow in/out of bodies. It acts outside of, and yet is intimately involved in, the production of obese or potentially obese bodies that inhabit it. Whilst Geographies of Obesity acknowledge that care must be taken 'not to fall into the cul-de-sac of environmental determinism' (Smith and Cummins,

2008:530-531), the genealogy of models such as ANGELO firmly situate this work within an environmental/infectious disease approach^{ix} and a deterministic model persists. This is particularly evident in the use of terms such as ‘exposure’, ‘potency’ (Pearce and Witten, 2010b) and ‘toxicity’ to explain the ways in which ‘obesogenic environments’ produce obese bodies (Kim and Kawachi, 2010; Smith and Cummins, 2008), also evident in some recent political ecology inspired work which explains obesity as a result of environmental toxins (Guthman, 2012).

There is growing recognition of the limitations of this conceptualisation of the environment within Geographies of Obesity since, as Townsend and Lake (2009:913) state, the focus is on what is *in* the environment rather than how the environment is used, meaning there is ‘generally little examination of what might be called “fitness for purpose”’. Such questions signify an openness to think beyond the built or physical environment and to critically engage with the inherent problems associated with identifying obesogenic factors and thus environments. Far from a static concept then, the ‘obesogenic environment’ within geographical research is always and already open to questioning because of the difficulties in understanding precisely what or whom is influencing bodies and environments and how they interact. At present, however, the questions being asked are limited in that they fail to challenge the usefulness of the underlying ‘energy balance’ model or the assumed relationship between fatness and health. It is here then that we suggest engagement with Critical Geographies of Obesity/Fatness could be useful in furthering this research, as will be made evident through the research trajectories we develop later in this paper.

2. Methodological tools and debates in obesogenic environment research

In methodological terms, obesogenic environment research uses a combination of existing secondary data sets, specially commissioned surveys, observational fieldwork and mapping, and although less common, some studies incorporate qualitative work with local communities (Pearce et

al., 2009). Where data isn't available at small area level, secondary data are often used in micro-simulation models and in the production of 'synthetic' estimates of body size based on a combination of existing body size data and demographic variables (see for example, Edwards and Clarke, 2009; Edwards et al, 2011; Moon et al, 2007; Stafford et al, 2007). Situated within a positivist research paradigm, emphasis is placed on identifying 'good and reliable tools and indicators' (Elinder and Jansson 2009:312). The term 'objective measures' (Lake et al., 2010; Townsend and Lake, 2009) is used to refer to secondary data or any data that are generated directly by a researcher through, for example, using government/industry databases or telephone directories to identify the location of food outlets (Fraser et al., 2010). These are considered to be more reliable than 'perceived measures' (Townsend and Lake, 2009) or self-reported data which are based upon the perceptions of people who live in particular environments. However, it is also widely appreciated that such 'objective' measures may be limited in their ability to fully understand the ways in which people use, and understand, their environments and thus Townsend and Lake (2009) suggest more mixed-methods research is needed.

Further methodological concerns relate to the difficulty in establishing causality in a field which, according to Townsend and Lake (2009:909), 'contains a great deal of correlation studies rather than exploring cause and effect'. In fact, as Mujajahid et al (2008:1356, cited in Turrell, 2010:151) argues, 'although neighbourhood environments are often identified as potentially important factors in understanding the obesity epidemic, little research provides evidence of this importance' (see also Townsend and Lake, 2009:912). As such, concerns have been raised within this scholarship about the conceptual basis for addressing the relationship between bodies and environments and it has been suggested that alternative theoretical approaches are needed (Thornton and Kavanagh, 2010; Moon, 2010). Acknowledging these limitations draws attention to particular commonalities between Geographies of Obesity and Critical Geographies of Obesity/Fatness. In particular, an openness to explore alternative theoretical models for understanding bodies and environments is important to our proposed critical account of obesogenic

environments, along with a commitment to work *with*, rather than control for, complexity, and to acknowledge alternative notions of causality (Moon, 2010). In light of this, in the following section of the article, we go on to demonstrate how critique can function to draw together as well as highlight differences between the two areas of work on obesity/fatness within geography in order to develop what we term Critical Geographies of Obesogenic Environments.

III. Critiquing obesogenic environments

As mentioned earlier, in contrast to the body of work described as Geographies of Obesity, Critical Geographies of Obesity/Fatness questions the ways that obesity/fatness is ‘presented’ as a problem, and the certainties through which obesity is related to a range of co-morbidities. It is, therefore, not premised on the assumption that fatness is a proxy for disease or ill-health, and it often challenges the measures used to classify bodies (see Evans and Colls, 2009). Unlike Geographies of Obesity which, as we have outlined, attempt to explain why some bodies/populations are fat, Critical Geographies of Obesity/Fatness seek instead to interrogate the discursive spaces through which bodies are produced as pathological (Evans, 2006; 2010; Guthman and DuPuis, 2006; McPhail, 2009), critique the spatialised technologies through which bodies are governed (Evans and Colls, 2009; Herrick, 2008; Pike and Colquhoun, 2010; Rawlins, 2009), and attend to the specificities of fatness as it is lived and experienced (Colls, 2004; 2006; 2007; 2012; Hopkins, 2012; Longhurst, 2005, 2012). Critical Geographies of Obesity/Fatness, therefore, levy an important challenge to dominant obesity discourse, policy and research. However, little specific attention has been paid to the ways in which this work can inform understandings of body-environment relations in ‘obesogenic environment’ research and policy (Guthman, 2011; Kirkland, 2011). Here, we want to highlight three ways that Critical Geographies of Obesity/Fatness can provide important critical interventions: measuring (obese) bodies, morality, and embodied environments.

1. *Measuring (obese) bodies*

As mentioned earlier, obesogenic environment research relies on the use of particular measures in order to categorise the qualities of environments and those who inhabit them. Underlying this 'search for the right variable' is the assumption that there *must be* a relationship between the environment, body size and health. The purpose of such research is to establish which measures best illustrate that relationship, despite little definitive evidence that this relationship exists. Indeed, as the following conclusion to Turrell's (2010:163-4) systematic review of obesogenic environment research on neighbourhood physical activity environments and body weight illustrates, rather than using data to challenge assumptions about the relationships between environment, body size and health, research which poses a challenge to these assumptions is often 'put aside' in order to maintain simple models which identify obesogenic characteristics:

The evidence was mixed and inconsistent, and for each statistically significant association that was reported there was often an accompanying null finding. ... However, there is another way of interpreting the pattern of evidence which lends itself to the conclusion that the neighbourhood environment influences bodyweight. If we put aside the null-findings (and admittedly run the risk of over-stating and simplifying things) and use the positive evidence to devise a neighbourhood that was conducive to a healthy bodyweight then it would probably have the following characteristics.

Instead of putting these 'null findings' aside, we argue that a Critical Geography of Obesogenic Environments should focus precisely on this indeterminacy in so-called 'evidence' as a means to re-think the assumed relationships between variables by opening up Geographies of

Obesity to alternative conceptual and theoretical models. Important to this would be an engagement with work in Critical Geographies of Obesity/Fatness, alongside other Fat Studies research, which demonstrates that measures such as BMI/WHR are notoriously unreliable in their ability to measure fatness, to make sense of body size distributions in different populations, and to indicate health status (see Evans and Colls, 2009). Whilst Geographers of Obesity are not unaware of the shortcomings of such measures, concerns about their validity are often dismissed on the basis that 'no other body measures are routinely available' (Smith and Cummins 2008:530). Yet despite this justification, BMI/WHR data are in fact rarely available at the level required to allow for the identification of small-scale environmental factors.

Obesogenic environment research is, therefore, often reliant on microsimulation models in order to produce data at the required scale. These models use demographic variables, such as gender, age, ethnicity and class in the production of synthetic data (for example, see Edwards et al 2011; Moon et al 2007). Thus, the inadequacies of measures such as BMI/WHR to account for bodily differences across different population groups (see Ross, 2005) are actually integral to the production of synthetic data sets. This is acknowledged to some extent, for example Moon et al (2007:29) explain that it is crucial to recognise that any conclusions drawn on the basis of such 'synthetic estimates' 'may give a misleading picture: we are in effect describing geographic variations in the socio-demographic profile that is [assumed to be] associated with obesity/overweight. This may not be the same as the actual geography of obesity/overweight'. However, such caveats fail to acknowledge the problems with using BMI in the first place (Evans and Colls, 2009); problems which may be exacerbated when race, age and gender are used to produce synthetic data.

Critically engaging with the type and use of measurement within research on obesogenic environments is therefore important to our approach. This is not only because of the problems with these measures outlined above, but also because even where data is available within required areas,

synthetic estimates maintain a certain power to constitute the bodies within those areas. For example, as we discuss elsewhere (Evans and Colls, 2009), in the case of the National Child Measurement Programme (NCMP) in the UK, estimates of obesity/overweight prevalence were used to assess the reliability of the data produced by measuring school children. Thus, the synthetic estimates were taken as more reliable than the empirical measurements. It is therefore important that geographers reflect not only on the adequacy of the data, but on the implications of their data for the populations they come to constitute.

2. Morality

Despite some attempts to acknowledge the moral discourses that surround body size (see Smith and Cummins, 2008), obesogenic environment research has been largely complicit (albeit perhaps unintentionally) in the reproduction of moralised assumptions about fat bodies and the environments they inhabit. Critical obesity researchers (including geographers) have argued, that the production of obesity as a 'problem' has occurred through the combination of medico-scientific knowledges and 'common sense' or moral knowledges within which 'pre-existing yet largely unexamined cultural understandings of fatness form the plinth of representations of scientific debate or agreement about weight' (Boero, 2007:51; see also Evans, 2006; Evans and Colls, 2009). Whilst the focus on the environment within Geographies of Obesity may be driven by a desire to 'remove moral blame from individuals from getting fat and to place it on social and economic factors' (Kirkland, 2011:466), important critical work is still required to understand the ways in which moral knowledges about different population groups inform the identification of 'at risk' places and bodies (Guthman 2011; Shannon, 2013).

To this end, it is worth considering specific incidences where assumptions about the capacities and activities of particular classed, racialised and gendered bodies inform the selection of

variables and researchers' interpretations of data in obesogenic environment research. First, in class terms, as Kirkland (2011) and Guthman (2011) argue, the selection of variables that indicate obesogenicity are often indicators of wealth or reflect elite ideologies about what makes an environment, and by implication its inhabitants, 'desirable'. These variables reveal 'unstated preferences for places with the amenities often associated with urbane, privileged environments, including university towns, artsy enclaves, gentrified urban cores' (Guthman 2011:86). For example, Harrington and Elliott (2009:596) consider social cohesion to be an important 'environmental' determinant of overweight/obesity. Their selection of 'proportion of homeowners vs. rental homes...as a proxy for neighbourhood social cohesion', reveals an assumption that social cohesion is related to wealth/class. Likewise, van Dyck et al, (2011:973) rate 7 items within the category 'Esthetic [sic] related problems', including 'graffiti, unmaintained green spaces and illegal posters'. It is assumed that these factors will increase the propensity to be obese because they are seen to make the environment unattractive for people to be physically active. Giles-Corti et al. (2010:138) also describe such environments as fearful and argue that fear produces a physiological reaction which causes weight gain by affecting the body's 'allostatic load'^x. In such arguments, classed aesthetics are clear, with little consideration that graffiti or 'illegal' posters may be aesthetically pleasing to some, and/or may be evidence of particularly (physically) active sub-cultural communities. Moreover, there is no reflection on how 'fear' might be produced through the continued stigmatisation of fat bodies, a process with which, we argue, work on obesogenic environments is complicit through reinforcing the labelling of all fat bodies as pathological.

Secondly, critical geographical research has highlighted the ways in which areas or environmental characteristics marked as 'unhealthy' or obesogenic are often those associated with particular racial or ethnic groups. For example, Herrick's (2008:2725) work in East Austin illustrates how 'obesity has been taken up to mark racialized social and spatial difference':

Figures [BMI data] show clearly that white residents, on average, have higher rates of obesity than Hispanic residents across the whole city. This figure is in stark contrast to the perception expressed by many interviewees that Hispanic residents are more prone to be obese (ibid.: 2726).

Evans et al. (2011:333) similarly highlight how particular 'ethnic' groups, foods, cultural and eating practices are identified as 'unhealthy' within health policy in England, situating obesity 'in the particular intergenerational and intercorporeal relations identified as 'other' to white, English families' (see also Campos et al, 2006:58 on race in media reporting in the USA; and Shannon, 2013 on the pathologisation of class and race in work on food deserts).

Thirdly, gendered assumptions also inform the selection of variables within research on obesogenic environments. Reflecting broader discourses that position obesity as a 'modern condition, variables often reflect a nostalgic understanding of what constitutes 'traditional' and 'healthy' lifestyles. In particular, obesity is often positioned as a consequence of the changing roles of 'working women'. For example, Giles-Corti et al (2010:140) use the variable 'hours worked by mothers' not as an indicator of the physical activity that women do, but as a proxy measure for unhealthy lifestyles, implying that working mothers have a negative impact on a family's health.

Across these examples, it can be argued that knowledge about obesogenic environments is rooted in discourses which reproduce middle class, white, 'nuclear' family lifestyles as healthy lifestyles (Rawlins, 2009) with 'other' population groups identified as problematic (McPhail, 2009). Assumptions about race, class and gender (along with others such as age, sexuality, and the intersections between these) are therefore written into research on 'obesogenic environments' through the ways that places, as well as bodies, are posited as 'other' and 'risky' (Herrick, 2008). Thus, Kirkland (2011:467-477) argues that there is a hidden moralism through which the impression is created that:

some people are impervious to bad environments (the elites, who still manage their bodies properly) while others are more fully constructed by their environments (poor fat people). Members of one group move powerfully through the world determining their body sizes and health statuses; others are pitifully stuck within and determined by the environment.

Rather than challenging the marginalisation of 'deprived communities' or social inequalities, obesogenic environment research is, therefore, often premised on a morally tinged environmental determinism which exacerbates the marginalisation of communities already stigmatised along racial and class lines through pathologising these places as obesogenic.

3. Embodied environments

The final critique of obesogenic environment research that we want to discuss is concerned with the 'type' of bodies that are reproduced in such research. Indeed, we argue that a direct consequence of the use of bodily measures such as the BMI, or categorisations of bodily difference such as gender, ethnicity and socio-economic status, is a paucity of thinking, feeling, moving bodies in research on obesogenic environments. This means that the fleshy materialities, physical capabilities, and sensuous dispositions of bodies that inhabit obesogenic environments are not considered. The use of secondary data also means that, despite an interest in physical activity and the movement of bodies, this research often requires bodies to be fixed in particular spatial boundaries (PCT, postcode, etc) and/or population groups (ethnicity, age, gender, class) (see Turrell, 2008). Where primary data is collected, engagement with bodies often remains limited. For example, the growth in research that uses Geographical Positioning Systems (GPS) to map bodies' movements (Cooper and Page, 2008), is still more concerned with 'measuring' frequency and extent rather than questioning why, how and with whom bodies inhabit (obesogenic) environments, or

what it *feels like* to inhabit those environments. Moreover, there is often an assumption that the environments a body encounters are those nearest to home.

Whilst there have been some calls for more qualitative work relating to obesogenic environments (Townsend and Lake, 2009) there is still a lack of engagement in Geographies of Obesity with those populations being researched. Indeed, even when 'why' and 'how' questions are asked about the relationships between people and different spaces and places, there remains a pre-determined consensus about what constitutes healthy and unhealthy bodies, behaviours and environments. There is little, or no, exploration of alternative, non-size related models of health (such as HAES), or the potential for participants in these studies to re-define health and/or wellbeing for themselves.

Conversely, Critical Geographies of Obesity/Fatness, can be firmly situated within wider debates in Geography concerned with 'the body' (see Longhurst 2001) which centre the fleshy materialities of fatness (Colls 2007), and the everyday emotional experiences of being a sized body (Hopkins 2008; 2012; Longhurst 2005; 2010; 2012). This work has demonstrated the value of understanding how and why sized bodies inhabit different spaces, as well as exploring the personal consequences of categorising bodies as obese. For example, Hopkins (2012) explores the self-consciousness and fear of judgement from other people that young fat people experience when eating in public; Colls (2006) documents the emotional experiences surrounding body size for fat women when shopping for clothes; and Colls (2012) reveals the importance of 'size accepting' spaces for fat people to feel safe away from potential discrimination in everyday public life. Moreover, Fat Studies research drawn from outside geography draws attention to the availability (or not) of spaces that are physically accessible for fat bodies (see Bias 2012 on public transport); whilst other work acknowledges that fat people *are* physically active (see Ellison 2009 and Schuster and Tealer 2009 on fat aerobics) – presenting a direct challenge to assumptions to the contrary that inform research on 'obesogenic environments'.

From these examples it becomes obvious that by not fully engaging with 'how' fat and potentially fat bodies actually experience and narrate their bodies and environments, obesogenic environment research is not fully engaging with a range of 'factors' such as discriminatory practices, stigma (see Cooper 1998; Puhl and Heuer 2009), and accessibility, which affect relationships between bodies, and between bodies and environments (Longhurst, 2010). There are potential connections here between research in health geography^{xi} concerned with place-based stigma (Keene and Padilla, 2010; Pearce, 2012) as a barrier to health (Pearce, 2012), and Fat Studies research which considers the ways in which stigma prevents fat people from accessing health care (Solovay, 2000). However, we suggest caution is needed in exploring these connections. Our critical engagement with obesogenic environment research, thus far, has demonstrated the inherent problems with labelling particular bodies and environments as obese and/or obesogenic. We are therefore wary of any research which may involve the identification of particular places as problematic because this could exacerbate their stigmatisation. For example, Guthman (2011) suggests that identifying particular areas as 'obesogenic' may lead to disinvestment in those areas or, conversely, to gentrification which may cause the displacement of those populations who previously lived there. Thus, it is vital that geographers researching obesity/fatness remain vigilant to the often unintended, but possibly harmful consequences of categorising and labelling particular places as stigmatised and/or obesogenic.

IV. Critical Geographies of Obesogenic Environments: developing research trajectories

Despite all the attention, the voices of fat people themselves are rarely heard. Fat men and women are presumed to be in pursuit of weight loss and literally hoping to

disappear as fat people. What if scholars reimagined them as citizens with claims to justice based on their status as fat? How would they make arguments for rights? Is resistance to the “lore” about fatness possible, and if so, in what terms? (Kirkland, 2008:399).

In this final section, we outline three research trajectories (conceptual, methodological and theoretical) central to the development of ‘Critical Geographies of Obesogenic Environments’. As the quote above from Anna Kirkland indicates, our overarching aim is for a geographical approach to fatness/obesity which is premised upon the inclusion and acknowledgement of fat people as citizens with rights as fat people (not potentially thin people). Therefore, what we propose is a geographical approach which we believe will provide a more nuanced framework for making sense of body-environment relations within geographical work on obesity/fatness.

1. (Re)conceptualising obesogenic environments

Firstly, a ‘critical geography of obesogenic environments’ requires a reconceptualisation of the term itself. Throughout this article we have argued that it is vital that geographical research avoids, or at least considers the repercussions of, reproducing a hegemonic pathologisation of fat bodies as inherently unhealthy. In contrast, as Fat Studies and HAES scholars argue, geographical work must acknowledge that it is possible to be fat, fit and healthy (Bacon and Aphramor, 2011). Such an acknowledgement would mean not relying upon flawed measures of body size as proxies for health, and avoiding the reproduction of racial, classed and gendered assumptions when assessing the quality of environments. It also requires untethering the relationships between bodies and environments from an energy balance model which narrowly conceives of a body as produced through its energy consumption and expenditure. In so doing, this approach offers the potential to

answer calls from within Geographies of Obesity for a much needed debate about the conceptual and theoretical models on which this work is premised (Moon, 2010). This would facilitate important and original geographical contributions to interdisciplinary knowledge about the relationship between health and place by critically engaging with the contradictions, complexities, and inconsistencies within existing research concerning causation, definitions and the use of variables (as discussed earlier). It would therefore allow the development of new understandings of the relationships between health and environments, which are not reducible to simplistic measures of body size.

This alternative stance can be contextualised within Fat Studies and HAES research in which health and well-being are divorced from weight/size (see Rothblum and Solovay 2009). This does not necessitate a movement away from a concern with health inequalities per se since, as Bacon and Aphramor (2011:1) explain, 'the primary intent of HAES is to support improved health behaviours for people of all sizes without using weight as a mediator'. What obesogenic environment research does tell us is that there are a number of issues that affect the everyday lives of differently sized bodies living in particular environments. Indeed, both Geographies of Obesity and Critical Geographies of Obesity/Fatness are committed to understanding and intervening in particular economic, political, and social factors that might affect a body's capacity to be well, and the ways in which these factors map onto broader structures of social disadvantage. Therefore, a HAES informed approach would enable a Critical Geography of Obesogenic Environments to document the range of factors that can affect (the health of) bodies in ways that may or may not relate to their body weight or size. For example, these might include food pricing, food availability, and access to recreation spaces, footpaths and cycle lanes, whilst taking into account the ways in which different bodies experience, move within, and interact in, different spaces.

We argue that this approach could also be facilitated by aligning obesogenic environment research with the social model of disability which, as Parr and Butler (1999:4) explain, recognises that 'it is society's organisation which 'disables' people with physical and/or mental limitations so

that they are marginalised socially, economically and politically’. Whilst there are debates within Fat Studies about the potential of disability theory and politics to facilitate a challenge to the stigmatisation of fat bodies (see Cooper, 1997; 2010; Kirkland, 2008), and problems with the social model of disability in its inability to acknowledge the ‘true pain’ of disability (Hall, 2000), there is potential here for this theoretical framework to envisage a reconceptualisation of obesogenic environments - not as environments that make bodies (fat), but as environments that make (fat) bodies problematic. Thus, rather than seeing all bodies of a particular size as unhealthy, this shift would involve recognising that bodies can be healthy, regardless of size, and that what matters in terms of inequalities is the ways in which physical, social, and legal barriers may prevent (fat) bodies from being well/healthy. For example, Robyn Longhurst’s (2010:212) work with fat women who live in Hamilton, New Zealand, offers an insight into the kind of geographies that this retheorisation might enable through her documentation of the ways in which ‘environments, both emotional and material, can be disabling for fat people’.

This is a fundamentally different approach to one that is only interested in understanding how environments *cause* fat.. The intention is not to facilitate fat bodies’ access to public space or particular foods *in the hope that this activity might make them thin*, but rather, as the quote from Kirkland (2008) opening this section indicates, it involves facilitating fat people’s access to, and use of, public space through *recognising our rights to public space as fat citizens*.

2. Researching fat bodies and environments

The second research trajectory we propose is concerned with methodologies. In particular, we would like to comment on the ‘weight bias’ that often emerges through the research process. Puhl and Heuer (2009:491) use this term to describe ‘inequalities in employment settings, health care facilities, and educational institutions often due to widespread negative stereotypes that overweight and obese persons are lazy, unmotivated, lacking in self-discipline, less competent, non-

compliant and sloppy'. Whilst they use this term to describe the ways that fat people are discriminated against in their everyday lives, as we have demonstrated in this article, such a 'bias' is also present in obesogenic environment research, evident in the assumptions and models that inform decisions about the variables used to produce synthetic data and identify obesogenic environments. It is also a product of the marked distance between those producing knowledge about obesogenic environments, and the bodies of those about whom this knowledge is being produced. In short, geographies of obesogenic environments, although concerned with fat, are thoroughly disembodied.

We argue that Critical Geographies of Obesogenic Environments require a methodological shift facilitated by engaging with work from feminist, queer, postcolonial and disability theory. Such work highlights the importance of the multiplicities of embodied experience, and challenges any 'distinction and distancing between the reality out there (which we map), and the in here (our bodies or selves)' (Binnie, 1997:224). For example, within Critical Geographies of Obesity/Fatness (and associated work in Fat Studies) there is an emerging body of work which draws on autoethnography (Longhurst, 2012; Murray, 2010) to highlight the everyday experiences and contradictions of being a fat (academic) body.^{xii} In short, regardless of method, it is necessary to not only reflect on our own bodies as researchers, but on how research may be informed by a personal investment in particular 'grids of right and wrong' about what researchers 'do to make their bodies *and* identities' (Guthman, 2009:1125).

We also suggest that Critical Geographies of Obesogenic Environments be developed further through participatory research. The aim here would not be to find an additional variable to better understand obesity causation, or to provide qualitative data within a pre-given framework of 'healthy' and 'unhealthy' lifestyles (Townsend and Lake, 2009). Instead, such research would document the ways in which people narrate their everyday embodied lives in relation to their own understandings of 'health' in ways which may or may not reveal the enabling/disabling effects of

particular (physical, social, political) environments on bodies of different sizes, and/or environmental inequalities that are not related to weight and do not demonise or stigmatise fat bodies (in line with the conceptual shift outlined above). We are not arguing here for exclusively qualitative work. There is real potential for critical quantitative geographies and participatory GIS (PGIS) to contribute to this work (Shannon, 2013), since 'a Participatory GIS celebrates the multiplicity of geographical realities rather than the disembodied, objective and technical 'solutions' which have tended to characterize many conventional GIS applications' (Dunn, 2007:616). This, approach should allow (fat) people to define and document for themselves the elements of their 'environment' which may affect how they access and move around in it, and how this makes them feel.

3. Re-theorising body-environment relations

Finally, we want to suggest that integral to the development of Critical Geographies of Obesogenic Environments is a re-theorisation of the ways in which body-environment relations are conceptualised. This article has reiterated throughout, that although wary of reproducing an environmentally deterministic account, much work on obesogenic environments contains elements of this. In short, the environment, however broadly conceived, is seen to determine body size. This is reflected in the evolutionary arguments that are used to justify the necessity of an 'ecological' or 'environmental' account of obesity. For example, with reference to Egger and Swinburn (1997), Smith and Cummins (2008:519) suggest that 'explanations for the rapid rise in obesity must originate from changes in the environment, as the distribution of genetic traits predisposing individuals to become overweight or obese remains unchanged over short biological time scales'. Central to this argument is the assertion that obesity is a specifically 'modern' condition, caused by living in environments which are 'toxic' because they disrupt 'natural' human-environment relationships. Particular understandings of nature and modernity are, therefore, central to these arguments, and are premised on a model in which, as Grosz (1999:382) explains 'cities have become (or may always

have been) alienating environments, environments which do not allow the body a 'natural', 'healthy', or 'conducive' context'.

Whilst there have been calls within Geographies of Obesity to re-theorise causation within body-environment relations (Moon, 2010), we suggest that what needs to be questioned is whether a causative model of this relationship can ever productively avoid the pitfalls of environmental determinism? Indeed, we argue that it is necessary to open up ideas about 'nature' and the spatiotemporal relations between bodies and environments to alternative, *non-causal*, theoretical frameworks which also politicise these relationships.

Here, there is clear potential for engagements with broader intra and inter disciplinary work to make an important contribution to obesity/fatness research. Historically, a strong resonance can be found with early critiques of geographies of mental health which, as Dean (1984:292) argued were 'rooted in the school of human ecology which controlled not only the methods of analysis ... but the explanations that could be entertained' (see also, Smith, 1978). Here, a shift away from spatial ecology approaches led to second and third wave geographies of mental health which enabled more theoretically sophisticated, ethically sensitive and methodologically rich research (Wolch and Philo, 2000).^{xiii}

There are also important connections to be made with geographical work informed by urban political ecology (see Heynen et al 2006) which Guthman (2011: 9) argues can be useful for deepening an understanding of obesity as an 'ecological condition' (see also Marvin and Medd 2006; Heynen 2006). She states that such an approach:

demands that we pay attention to the broader political-economic and cultural context in which individual decision affecting ecologies – even internal, bodily ecologies – are made. It also requires we pay attention to the role of corporate behaviour, state regulation, and the

political economy more generally... (and)....to how knowledge of obesity as a biological condition is constructed and interpreted'

However, it must also be stated that despite the usefulness of this theoretical approach, much of this work continues to position the obese/fat body as inherently unhealthy and/or adopts and 'energy balance' approach. However, we feel that through a more thorough engagement with the tenets of Critical Geographies of Obesity, there is potential for research which critically interrogates the socio-political 'natures' through which obesity is positioned in the relationship between bodies and environments. This would also benefit from engagement with work on embodied socio-natures (Mansfield, 2008) and ontological politics in relation to health (Greenhough, 2011) which draws attention to the often absent material, biological body without reinforcing essentialist and determinist accounts of what constitutes a body and what a body is capable of.

Elsewhere, in interdisciplinary Fat Studies scholarship, significant work is being developed which draws on feminist and queer theory to question the evolutionary narratives through which obesity is constructed as a 'modern problem' (see White, 2012a; 2012b). There is also an important body of geographical work on urban health politics (Brown, 2009; Craddock, 1999). Combined, these different but related theoretical approaches allow for a critical, geographical and politicised, interrogation of ideas concerning what constitutes the 'natural' in relation to bodies, environments and body-environment relations whereby:

the natural is *not* the inert, passive, unchanging element against which culture elaborates itself but the matter of the cultural, that which enables and actively facilitates cultural variation and change, indeed that which ensures that the cultural, including its subject-agents, are never self-identical, that they differ from themselves and necessarily change over time... .

[T]he other, culture, providing the latest torsions, vectors, and forces in the operations of an ever-changing, temporally sensitive nature (Grosz 2005: 47, *emphasis original*)

Moreover, a focus on obesity/fatness has much to offer these literatures through drawing attention to the ways in which bodily matter is implicated in contemporary political agendas. The retheorisation of 'nature' and 'the natural' that we propose here would facilitate the methodological and conceptual trajectories outlined above. By shifting emphasis away from a concern with how 'unnatural' environments disrupt 'natural' bodily development (Evans, 2010; White, 2012a; 2012b), questions can instead be asked about how particular configurations of socio-political natures make fatness problematic. In short then, the approach we are advocating is one where:

the question is not simply to distinguish life-enhancing from life-denying environments, but to examine how different cities, different sociocultural environments actively produce the bodies of their inhabitants as particular and distinctive types of bodies, as bodies with particular physiologies, affective lives and concrete behaviours (Grosz 1999:386)

V. Conclusion

In this article we have set out research trajectories for the development of Critical Geographies of Obesogenic Environments by placing two bodies of competing but connected geographical research alongside each other. We have outlined the main conceptual and methodological tenets of Geographies of Obesity research, and have brought the ethos and content of Critical Geographies of Obesity/Fatness to bear on this work. In so doing, we have not only drawn attention to the fundamental differences in the ways in which these bodies of work approach obesity/fatness, but have also identified similarities and connections. For example both bodies of work have a commitment to understanding the relationships between health inequalities, stigma and place, and the significance of social, cultural and political contexts for making sense of obese/fat

bodies. This has enabled us to outline an agenda for what we have termed 'Critical Geographies of Obesogenic Environments' which, we argue, would avoid the problems which stem from the use of unreliable measures such as the BMI (Evans and Colls 2009), the reproduction of implicit and explicit classed, racialised and gendered assumptions about (obese) bodies and the environments that they inhabit (Guthman 2011), and the noticeable absence of the voices and experiences of 'real' bodies in obesogenic environment research (Longhurst 2005; 2010).

In the final section of the article we have suggested three trajectories for Critical Geographies of Obesogenic Environments. These focus on specific ways that the conceptual, methodological and theoretical tenets of obesogenic environment research can be developed and deepened in conjunction with wider geographical debates. These include, considering alternative theorisations of society-nature relations, deploying participatory methods, and engaging with interdisciplinary work in Fat Studies and HAES which insists on decoupling weight from health and centring the voices and experiences of fat people. Our intention in setting out these trajectories is to inform all geographical research agendas concerned with obesity/fatness, including our own. What we are calling for through suggesting these trajectories, is a geographical engagement with obesity/fatness which helps draw attention to the injustices and inequalities in the spatial politics which surround body size, but which does not contribute to the stigmatisation and pathologisation of particular bodies and spaces/environments. In short, to paraphrase Kirkland (2008:399), we are calling for a geography of obesity/fatness/obesogenic environments within which fat people (and in this we include ourselves) exist "as citizens with claims to justice based on their[our] status as fat", not as problematic bodies to be 'cured'.

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ⁱ The terms 'obese', 'obesity', 'overweight', 'underweight' and 'normal weight' are contested and highly problematic. As we will outline in this paper, and have argued elsewhere (Colls and Evans, 2009), in line with work in Fat Studies and Health at Every Size, we do not accept that fat or big bodies are inherently unhealthy. Therefore 'obese' and 'obesity' are problematic since they mark a body as 'diseased' on the basis of size. Whilst we use the term 'obesity' when referring to the ways in which fat bodies are medicalised, or when citing work which uses this term, we do so with care, and always problematise it as a labelling tool. When describing bodies beyond these specific contexts, we avoid using these problematic terms, and instead, use the word fat in line with Fat Activists' use of the term as a means of self-definition and to reclaim the word from its derogatory usage (See Cooper, 2010).

ⁱⁱ Throughout the article we refer to both obese/fat and *potentially* obese/fat bodies to acknowledge that body size and shape is not fixed (Longhurst, 2012), and that in dominant obesity discourse all bodies are framed as 'potentially obese' and encouraged to constantly 'work' to maintain a slim body (Evans, 2006; 2010).

ⁱⁱⁱ HAES is growing as an approach within dietetic academic and practitioner communities. In short, it is an approach which divorces health from weight/size and aims to improve health without placing any focus on body size. For more information, see Bacon and Aphramor (2011).

^{iv} We use the term 'critical' in line with interdisciplinary work which uses 'critical obesity' or 'critical weight' studies to refer to work that is critical of the framing of fatness as pathological. Our intention is not to imply that there is nothing within 'Geographies of Obesity' that resonates with 'critical geography' (see Blomley 2006, 2007, 2008), but to distinguish between geographical work in relation to how it (critically) approaches dominant understandings of obesity causation and health risk.

^v BMI or Body Mass Index is the most commonly used measure to define overweight and obesity. It is calculated as weight (kg) divided by height (m) squared. We have critiqued the use of this measurement in previous research (see Evans and Colls 2009).

^{vi} The ANGELO model was originally piloted in the Torres Straits islands, and in relation to the location of fast food restaurants and prevalence of obesity in New Zealand. It has subsequently been used in multiple research settings (Harrington and Elliot, 2009). Clearly there are problems in the transference of this model to other locations, but it is outside the scope of this paper to address this in full.

^{vii} WHR is used less commonly than BMI but is increasingly used. It is calculated as the circumference of the waist divided by the circumference of the hips.

^{viii} This model is heavily critiqued in Fat Studies and HAES literatures (Aphramor, 2005; 2010; Gard and Wright, 2005; Guthman, 2011).

^{ix} As Kim and Kawachi (2007:42) explain, the ANGELO model was originally devised by Swinburn et al (1999) through combining and adapting the 'Host-Agent-Environment epidemiological triad' (developed for infectious diseases) and the 'Haddon injury prevention matrix' (an adapted version of the epidemiological triad used to explain injuries through suggesting that energy - mechanical energy, heat energy, etc - acts as a vector/agent of injury).

^x 'A measure of wear and tear on the body resulting from efforts to maintain stability in response to stressors' (Giles-Corti et al., 2010:138).

^{xi} Thanks to an anonymous reviewer for highlighting this connection

^{xii} Whilst autoethnographical inspired accounts make important contributions, they can only provide partial accounts of the multiplicity of fat embodied experience. It is important to note that whilst there is a growing body of work written by non-western academics and activists (see for example, Isono et al, 2009), there is considerable critical debate within Fat Studies and Fat Activism about the dominance of Anglo-American perspectives (Cooper, 2009) and the whiteness of fat activism (NOLOSE, 2012).

^{xiii} Thanks to one of the journal's editors for highlighting these similarities.

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